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(54) Title: REAGENTS AND A METHOD FOR SATURATION LABELLING OF PROTEINS

(57) Abstract: A matched set of fluorescent dyes is provided, wherein each dye of the set is capable of covalent attachment to a protein and wherein each of the dyes has a molecular structure and a charge that is matched one with the other, such that relative electrophoretic mobility of a protein labelled with one dye of the set is the same as the electrophoretic mobility of the protein labelled with a different dye of the set. The matched set comprises at least two different fluorescent dyes of formula: wherein n is 1, 2, or 3; Z1 and Z2 independently represent the carbon atoms necessary to complete a phenyl or naphthyl ring system; one of groups R1 and R2 is a target bonding group; remaining group R1 or R2 is selected from -(CH2)⁴-W or -(CH2)ⁿ-H; group R3 is hydrogen, except when either R1 or R2 is -(CH2)ⁿ-H, in which case R3 is W; and W is selected from sulphonic acid and sulphonate. The invention also provides a method for saturation labelling of a protein with a fluorescent dye so as to label all available target amino acid, suitably cysteine, residues in the protein, thereby giving a single population of labelled protein molecules.